

**III B.Tech I Semester Supplementary Examinations, May 2005**  
**BIOLOGICAL CONTROL SYSTEMS**  
**(Bio-Medical Engineering)**

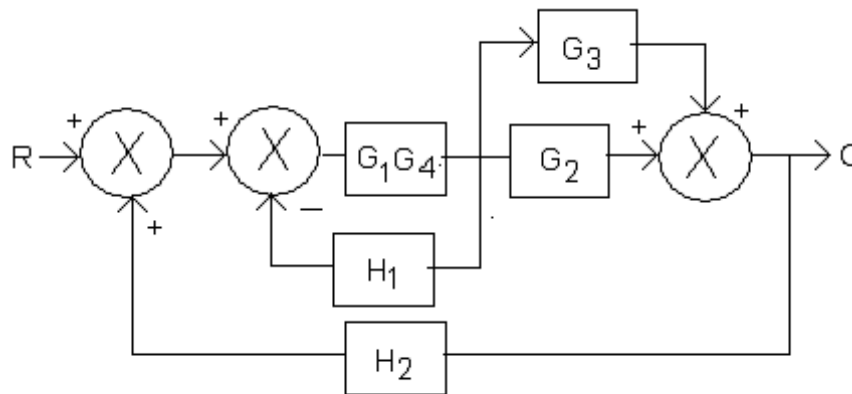
Time: 3 hours

Max Marks: 70

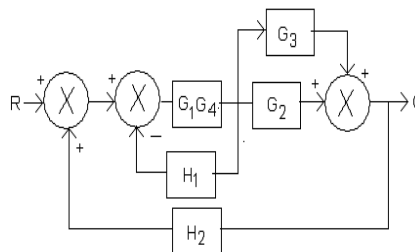
Answer any FIVE Questions  
 All Questions carry equal marks

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1. (a) Compare technological control system with physiological control system. Give examples.
- (b) Using SFG, find C / R for the system



2. (a) With an example, explain closed loop system.
- (b) For the given system find C / R using block diagram reduction method.



3. (a) Explain RH criterion for stability.
- (b) For the given system, prove that it is stable  
 $S^6 + 2S^5 + 8S^4 + 12S^3 + 20S^2 + 16S + 16 = 0$
4. (a) Explain the terms:
  - i. Free swinging limbs
  - ii. Semi circular canal

- (b) Explain the production of heat from the human body and heat loss from it and its regulation.
- 5. (a) With a block diagram explain the concept of PCS.  
(b) Write a note on Biofeedback.
- 6. (a) With a mechanical diagram explain cardiovascular system.  
(b) Write a note on oculo-motar system.
- 7. (a) What is a Biological receptor? Explain its characteristics. Write the transfer function and the model.  
(b) Explain the endocrine control system.
- 8. Write short notes on:
  - (a) Stability and compensation
  - (b) Eye tracking
  - (c) Visual fixation.

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